

LORIS BAZZANI

PRINCIPAL COMPUTER VISION SCIENTIST AT AMAZON

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<http://lorisbaz.github.io>

<http://scholar.google.com/citations?user=1cdNGL4AAAAJ&hl=en>

CURRENT POSITION

Amazon

Jan 2016-now

Principal Computer Vision Scientist

- Design and prototype interactive experiences based on computer vision and natural language processing
- Develop computer vision models for improving the accessibility of images and evaluate via user studies
- Prototype and productionalize models for video understanding and fashion AI
- Collaborate and partner with business and engineering teams across the organization
- Experience in transferring technology into a shipping product
- Mentorship experience of interns, scientists, engineers and product managers
- Establish research and productization roadmaps
- Ability to present the work and discuss with senior leadership (including SVPs)
- Scientist L5 (2016-2018), Sr. Scientist L6 (2018-2022) and Principal Scientist L7 (2022-now)

PREVIOUS EXPERIENCE

Dartmouth College

Jan 2014-Dec 2015

Postdoc at the Visual Learning group

- Research on object localization and detection in images, deep learning and salience prediction for videos
- Supervisor: Prof. L. Torresani

University of Verona

Dec 2013

Research Collaborator

- Research on object recognition and saliency for images
- Supervisor: Dr. M. Cristani

Italian Institute of Technology

Dec 2011–Nov 2013

Postdoc at the Pattern Analysis and Computer Vision group

- Research on social interaction analysis in videos using dynamic Bayesian nets and Bayesian non-parametric models. Research on kernel-based object recognition and person re-identification
- Supervisor: Prof. V. Murino

University of British Columbia

May–Nov 2010

Research Intern at the Laboratory for Computational Intelligence

- Research on restricted Boltzmann machines, deep learning and attentional models
- Supervisor: Prof. N. de Freitas

EDUCATION

University of Verona

Jan 2009–May 2012

Ph.D. in Computer Science with focus on Computer Vision and Machine Learning

- PhD Thesis: Beyond multi-target tracking: statistical pattern analysis of people and groups.
- Research on person re-identification, individual-group tracking and attentional models
- Advisors: Prof. V. Murino, Dr. M. Cristani
- Reviewers: Prof. A. Del Bimbo, Prof. R. T. Collins

University of Verona

Sep 2006–Dec 2008

M.S. in Intelligent and Multimedia Systems

- Thesis topics: particle filtering and multi-target tracking

- Advisors: Prof. V. Murino, Dr. M. Cristani
- *Summa cum laude*

University of Verona

Sep 2003–Dec 2006

B.S. in Information Technology

- Thesis topics: classification, medical imaging, and mental health application
- Advisors: Prof. V. Murino, Prof. U. Castellani

AWARDS AND GRANTS

- **Amazon Accessibility Innovation Award**, internal award given to individuals who created experiences to improve accessibility, 2021.
- **Amazon Robotics Challenge Award**, internal award given to the team who won the robotics challenge, 2018.
- **IBM Best Student Paper Award**, track: Computer Vision at International Conference on Pattern Recognition ICPR, 2010
- **Scholarship** from University of Verona that supported my Ph.D. from Jan. 2009 to Dec. 2011
- **Scholarship** from EU-Project FP7 SAMURAI, grant FP7-SEC-2007-01 No. 217899, that contributed to support my Ph.D. from Jan. 2009 to Dec. 2011
- **Travel grant** from University of British Columbia to attend Neural Information Processing Systems, 2010
- **Travel grant** from International Machine Learning Society to attend the International Conference on Machine Learning, 2011

TEACHING

Dartmouth College

Winter 2015

Machine Learning

- Tutor of the undergrad course taught by Prof. L. Torresani

Italian Institute of Technology

Winter 2013

An Introduction to Machine Learning and Computer Vision

- Course for Ph.D. students, organized in collaboration with other members of PAVIS group

University of Modena and Reggio Emilia

Spring 2011

Person Re-identification

- Person Re-identification: a recent issue for the video surveillance community and a technique for approaching it
- Held at the Short Spring School in Surveillance, organized in collaboration with Prof. M. Cristani

PUBLICATIONS

[Blue color](#) = top-tier computer vision/machine learning conferences or journals.

Vision and language

- Y. Hou, E. Vig, M. Donoser, L. Bazzani. Learning Attribute-driven Disentangled Representations for Interactive Fashion Retrieval, [ICCV](#), 2021.
- A. Salvador, E. Gundogdu, L. Bazzani, M. Donoser. Revamping Cross-Modal Recipe Retrieval with Hierarchical Transformers and Self-supervised Learning, [CVPR](#), 2021.
- Y. Chen, and L. Bazzani. Learning Joint Visual Semantic Matching Embeddings for Language-guided Retrieval, [ECCV](#), 2020.
- Y. Chen, S. Gong, and L. Bazzani. Image Search with Text Feedback by Visiolinguistic Attention Learning, [CVPR](#), 2020.
- L. Bazzani, T. Domhan, and F. Hieber. Image Captioning as Neural Machine Translation Task in SOCKEYE, Arxiv, 2018.

Person re-identification

- L. Bazzani, M. Cristani, and V. Murino. SDALF: Modeling human appearance with symmetry-driven accumulation of local features, Person Re-identification, 2014.

- D. Figueira, L. Bazzani, H.Q. Minh, M. Cristani, A. Bernardino, and V. Murino, Semi-supervised multi-feature learning for person re-identification, *AVSS*, 2013.
- P. Salvagnini, L. Bazzani, M. Cristani, and V. Murino, Person re-identification with a PTZ camera: an introductory study, *ICIP*, 2013.
- L. Bazzani, M. Cristani, and V. Murino. Symmetry-driven accumulation of local features for human characterization and re-identification, *CVIU*, 2013.
- B. I. Barbosa, M. Cristani, A. Del Bue, L. Bazzani, and V. Murino, Re-identification with RGB-D sensors, In 1st International Workshop on Re-Identification, 2012.
- L. Bazzani, M. Cristani, A. Perina, V. Murino, Multiple-shot person re-identification by chromatic and epitomic analyses, *PRL*, 2012.
- D. S. Cheng, M. Cristani, M. Stoppa, L. Bazzani, V. Murino, Custom pictorial structures for re-identification, *BMVC*, 2011.
- L. Bazzani, M. Cristani, A. Perina, M. Farenzena, and V. Murino, Multiple-shot person re-identification by HPE signature, *ICPR*, 2010.
- M. Farenzena, L. Bazzani, A. Perina, V. Murino, and M. Cristani Person re-Identification by symmetry-driven accumulation of local features, *CVPR*, 2010.

Attention and Saliency

- L. Bazzani, H. Larochelle, and L. Torresani, Recurrent Mixture Density Network for Spatiotemporal Visual Attention, *ICLR*, 2017.
- M. Denil, L. Bazzani, H. Larochelle, and N. de Freitas, Learning where to attend with deep architectures for image tracking, *Neural Computation*, 2012.
- L. Bazzani, N. de Freitas, H. Larochelle, V. Murino, J. Ting, Learning attentional policies for object tracking and recognition in video with deep networks, *ICML*, 2011.
- L. Bazzani, N. de Freitas, J. Ting, Learning attentional mechanisms for simultaneous object tracking and recognition with deep networks, Workshop on Deep Learning and Unsupervised Feature Learning, 2010.

Object Recognition and Classification

- H. Q. Minh, M. San Biagio, L. Bazzani, and V. Murino, Kernel Methods on Approximate Infinite-Dimensional Covariance Operators for Image Classification, *Arxiv*, 2016.
- M. San Biagio, H. Q. Minh, L. Bazzani, V. Murino. Approximate Log-Hilbert-Schmidt distances between covariance operators for image classification, *CVPR*, 2016.
- L. Bazzani, A. Bergamo, D. Anguelov, L. Torresani. Self-taught object localization with deep networks, *WACV*, 2016.
- H. Q. Minh, L. Bazzani, V. Murino, A unifying framework in vector-valued reproducing kernel Hilbert spaces for manifold regularization and co-regularized multi-view learning, *JMLR*, 2016.
- M. San Biagio*, L. Bazzani*, M. Cristani, V. Murino, Weighted bag of visual words for object recognition, *ICIP*, 2014. (* equal contribution)
- H. Q. Minh, L. Bazzani, V. Murino, A unifying framework for vector-valued manifold regularization and multi-view learning, *ICML*, 2013.

Social Interaction Analysis

- S. Vascon, and L. Bazzani, Group Detection and Tracking using Sociological Features, In Group and Crowd Behavior for Computer Vision, 2017.
- L. Bazzani*, M. Zanotto*, M. Cristani, V. Murino, Joint individual-group modeling for tracking, *PAMI*, 2015. (* equal contribution)
- L. Bazzani, D. Tosato, M. Cristani, M. Farenzena, G. Paggetti, G. Menegaz, V. Murino, Social interactions by visual focus of attention in a three-dimensional environment, *Expert Systems*, 2013.
- L. Bazzani, V. Murino, and M. Cristani, Decentralized particle filter for joint individual-group tracking, *CVPR*, 2012.
- L. Bazzani, M. Cristani, G. Pagetti, D. Tosato, G. Menegaz, V. Murino, Analyzing groups: a social signaling perspective, *Video Analytics for Business Intelligence*, 2012.
- M. Zanotto, L. Bazzani, M. Cristani, and V. Murino, Online bayesian non-parametrics for social group detection, *BMVC*, 2012.

- M. Cristani, L. Bazzani, G. Paggetti, A. Fossati, A. Del Bue, D. Tosato, G. Menegaz, V. Murino, Social interaction discovery by statistical analysis of F-formations, [BMVC](#), 2011.
- M. Cristani, G. Paggetti, A. Vinciarelli, L. Bazzani, G. Menegaz, V. Murino, Towards computational proxemics: Inferring social relations from interpersonal distances, SocialCom, 2011.
- L. Bazzani, M. Cristani, and V. Murino, Collaborative particles filters for group tracking, ICIP, 2010.
- M. Farenzena, A. Tavano, L. Bazzani, D. Tosato, G. Paggetti, G. Menegaz, V. Murino, and M. Cristani, Social interaction by visual focus of attention in a three-dimensional environment, Workshop on Pattern Recognition and Artificial Intelligence for Human Behavior Analysis, 2009.
- M. Farenzena, M. Cristani, L. Bazzani, and V. Murino, Towards a subject-centered analysis for automated video surveillance, ICIAP, 2009.

Patents

- L Bazzani et al., Automated video ratings, US Patent 10,643,074.
- 7 filed patents.

CODING

Programming/Tools Python (> 8 years), MATLAB (> 6 years), Lua/Torch7 (> 1 year), JS (< 1 year), git, LATEX, bash scripting, AWS, Qualtrics, Alexa skill devel.

REVIEWING ACTIVITIES

Journals	IEEE TPAMI, IJCV, IEEE Transactions on Multimedia, IEEE Transactions on Image Processing, IEEE Transactions on Circuits and Systems for Video Technology, IEEE Transactions on Systems, Man and Cybernetics - Part B, Pattern Analysis and Applications, Image and Vision Computing, Transactions on Information Forensics & Security, PLOS ONE, Neurocomputing.
Conferences	NeurIPS, ICML, ICLR, CVPR, ICCV, ECCV, BMVC, IROS, ICRA.

REFERENCE LIST

- **Prof. Lorenzo Torresani.** Supervisor of the postdoc at Dartmouth College.
- **Prof. Vittorio Murino.** Advisor of the PhD at University of Verona and the postdoc at the Istituto Italiano di Tecnologia.
- **Prof. Nando de Freitas.** Supervisor during the internship at the University of British Columbia.
- **Prof. Marco Cristani.** Co-supervisor during the PhD at University of Verona and collaborator during the postdoc at the Istituto Italiano di Tecnologia.
- **Prof. Hugo Larochelle.** Co-supervisor for the attentional modeling project.